ENERGY STUDY OF
SUPPLEMENTAL BOILERS
CENTRAL HEATING PLANT

FINAL SUBMITTAL

CHARLES MELVIN PRICE SUPPORT CENTER
GRANITE CITY, ILLINOIS

June 14, 1996

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DEPARTMENT OF THE ARMY
CONSTRUCTION ENGINEERING RESEARCH LABORATORIES, CORPS OF ENGINEERS
P.O. BOX 9005
CHAMPAIGN, ILLINOIS 61826-9005

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SECTION 1

EXECUTIVE SUMMARY

A. Introduction

The Melvin Price Support Center Central Boiler House has a heating and power plant consisting of two oil-fired steam boilers each with a capacity of over 53 million BTU's per hour.

There are four separate buildings on site which are occupied 24 hours per day. These buildings require heat during the night during the intermediate periods of the year, mainly the months of October, March and April. As a result, the central power plant must be brought on line earlier and stay in service later than it would otherwise need to, since all other buildings on site do not operate at night and thus require no heat during these months. Operating such a large plant to serve such a small load uses fuel very inefficiently. The study was to determine if the efficiency resulting from providing a small steam boiler sized just for those buildings could economically justify the cost of the installation.

In the entry interview, Mr. Joseph Hooten requested that we consider a new electric steam boiler as well as a gas-fired steam boiler. This was agreed to.

B. Building Data

Building	Type	Floor Area (sq. ft.)
192	Housing	26,566
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221	Security	5,083
305	Fire Station	6,439

C. Present Energy Consumption

- Total Annual Energy Used: 1,388 million BTU (21,472 BTU/sq. ft.)
- Source Energy Consumption: 2,243 million BTU (34,702 BTU/sq. ft.)

- Fuel Consumption Data:

Fuel	Usage	Million BTU/yr.	Dollars/yr.
Electricity	117,678*	401.6	$4,854
Oil	7,114**	986.6	$5,549

* KWH/yr
** Gallons/yr

D. Energy Conservation Analysis

1) ECO's Investigated

Two ECO's (Alternatives A and B) were analyzed. Alternative A was based on a 2 pass Scotch Boiler. In our visit to the Boiler House, we found both good floor space available for such a boiler and a pair of double doors which offer a relatively simple means to get such a boiler into the building. Finally, the Boiler House is laid out and piping and equipment are installed in such a manner that tie-in points to steam supply piping, condensate return piping and boiler stacks are relatively easy to access.

The installation would consist of extending steam and condensate connections from the new boiler and tieing into steam and condensate piping at appropriate locations in the Boiler House with control valving installed to ensure that steam and condensate flow occurred in the proper directions. Natural gas is available at the Boiler House, and the new boiler flue would be connected into the existing boiler breaching.

Alternative B is similar in concept to Alternative A, but used electricity to generate steam in place of natural gas. Steam connections in the Boiler House would be the same as for the Scotch Marine Boiler, but obviously there would be no boiler stack work required, and electric power work would replace natural gas piping.

2) ECO's Recommended

Alternative A has an SIR value of 1.36 and therefore falls in the category of a Recommended ECO.

3) ECO's Rejected

Alternative B has an SIR value of 0.21. This value is less than the SIR threshold value of 1.0 (as stated in paragraph 5.2 of the Scope of Work in Appendix A), and therefore Alternative B is rejected.

4) ECIP Projects Developed

None.

5) Non-ECIP Projects Developed

Alternative A, based upon the criteria stated in paragraph 5.2 of the Scope of Work (see Appendix A), falls into the classification of a "Low Cost/No Cost" project. Following is data revelant to this ECO.:

Cost:	$83,049.00
Annual Energy Savings:	476,812 MBTU
Energy Type Saved:	Fossil Fuel and Electricity
Annual Cost Savigs:	$5,875
SIR:	1.36
Simple Payback Period:	14.1 years
Analysis Date:	16 May 1996

6) Operational of Policy Change recommendations

None.

E. Energy and Cost Savings

Total Annual Energy Savings:	476,812 MBTU
Total Annual Cost Savings:	$5,875.00
Percentage of Energy Conserved:	34.3%
Energy Used Before Implementation:	1,388 Million BTU per year
Energy Cost Before Implementation:	$10,403 per year
Energy Used After Implementation:	911 Million BTU per year
Energy Cost After Implementation:	$4,528 per year